Appln. No. 10/736,315
Amendment dated March 15, 2006
Reply to Office Action of December 15, 2005
Docket No. BOC9-2003-0080 (454)

REMARKS/ARGUMENTS

These remarks are submitted in response to the Office Action of December 15, 2005 (Office Action). As this response is timely filed within the 3-month shortened statutory period, no fee is believed due.

In paragraph 1 of the Office Action, Claims 1-18 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Publication No. US2002/0076008A1 to Neary (hereinafter Neary).

I.   Applicants' Invention

It may be helpful to reiterate certain aspects of Applicants' invention prior to addressing the references cited in the Office Action. The invention, according to one embodiment, provides a method of verifying software program operations during execution of a voice response system. The method steps can occur within the voice response system. The method can include establishing a voice link with a test system, receiving a request from the test system, executing one or more operational software programs to determine a voice prompt to play over the established voice link in response to the request, gathering execution information associated with the executing operational software programs, playing the determined one or more voice prompts over the voice link to the test system, and sending the execution information to the test system over the voice link following the voice prompts. Notably, the execution information pertains to the execution of the operational software programs on the voice response system. The execution information can be specified using one or more dual tone multi-frequency signals. In one aspect, the execution information includes one of path and address names, path verification, execution conditions, or method calls.

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II.   The Claims Define Over the Prior Art

As already noted, Claims 1-18 were rejected as being anticipated by Neary. Neary is directed to verification of content and flow of messages or prompts provided by a voice response system in the course of processing a user call. An interactive audio system enables automated verification of utterance content and call flow performance. The system emulates an exchange of voice inquiries for call-flow verification purposes to simulate a typical customer inquiry. The interactive audio system incorporates the capability of providing coded signals representative of content of each utterance in coded format for inclusion in prompt signals to enable verification processing. By comparing the content of utterance labels, as represented by such coded signals transmitted in the course of a call connection, to pre-stored data representing the content of correct utterance labels for the interactive audio system under test, discrepancies can be identified and reported. Such discrepancies may represent, for example, utterance content errors or omissions, call flow errors or omissions, or combinations thereof.

Neary is clearly directed to call-flow verification. Call-flow verification determines whether a response is an expected response in view of an inquiry. The response is examined and compared to a list of expected responses that are known to occur given information related to the inquiry. A call-flow error occurs when an IVR responds with an unexpected response. Neary codes voice prompts for identifying the content of the voice prompt in order to compare the response from the IVR. Neary can identify call-flow errors when a response does not match an expected response. For example, by comparing content of an utterance label as represented by coded signals included in a prompt signal with content of a correct utterance label (i.e., accurately responsive to a particular simulated user input) as represented by previously stored data, discrepancies can be identified. Discrepancies may include an inaccurate utterance, a missing utterance, an out of order utterance, or any other discrepancy. Absent any

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discrepancy, accuracy of call-flow may be confirmed (Neary Pg. 4, [paragraph 0037]).

In contrast, Applicants are directed to gathering and sending information associated with the execution of operational software programs involved in determining a voice prompt reply (See Specification, Pg. 7, paragraph [0019]). More particularly, the voice response system attempts to understand an inquiry for processing the inquiry and responding with an appropriate voice prompt. For example, an inquiry may be a spoken utterance which the voice response system can interpret for routing a call, or for responding with a voice prompt. Based on the inquiry, the voice response system may route the call to various entities for handling the call, or it may play a voice prompt to inform the user of alternate choices, for example. The voice response system includes software program modules for interpreting the inquiry and determining an appropriate voice prompt reply or a programmatic action.

In call-flow verification only an output of the voice response system is required. For example, the output is the actual voice prompt reply which can be compared against an expected reply. Accordingly, Call-Flow verification processes such as Neary attempt to validate the output based on knowledge of the input inquiry. Neary clearly describes a method for identifying discrepancies between voice prompts produced (output) by a voice response system and the expected voice prompt. The software programs that interpret the inquiry to produce the voice prompt can inherently include information regarding the decision process. However, Neary does not even contemplate this. In Applicant's case, this information is made useful for evaluating the performance of the voice response system. Accordingly, Applicants' invention is directed to extracting information generated during the processing of an inquiry for benchmarking the processes associated with making the voice prompt (output) decision.

For example, software modules can include speech to recognition systems or filters for extracting information from the spoken utterance. As is known in the art, speech recognition systems can include multiple modules collectively providing

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probabilities or likelihoods associated with their decision. Understandably, this information, if made available, can be evaluated to verify an outcome associated with a voice prompt reply or to better understand the decision process. For example, the decisive information can include identifying which modules were called, which methods were called, execution conditions, pass/fail metrics, and the like (See Specification, Pg. 8, paragraph [0021]). Understandably, the information exposed from the software modules can be employed to validate a call route or an appropriate voice prompt reply in view of the inquiry.

Accordingly, Applicants include a testing program within the IVR to monitor the execution of the software programs and to extract information from the modules during the processing of an inquiry (Specification, Pg. 7 paragraph [0019], "... can include test computer programs which gather execution information"). For example, the monitoring program can identify the sequence of method calls invoked, the software modules used during processing the voice command, and the voice prompt hierarchy in the IVR accessed during processing. The testing program can also gather programmatic actions of the software modules associated with the processing of the inquiry. The programmatic actions can reveal why a response is provided and can indicate as to how the response was formulated. Programmatic actions are not available by examining the voice prompt response (output) alone.

Applicants respectfully assert, that Neary fails to expressly or inherently teach every feature of Applicants invention. For example, Neary fails to teach gathering execution information associated with operational software programs executing within a voice response system. Neary also fails to teach sending the execution information to the test system over a voice link, wherein the execution information includes paths and address names, path verification, execution conditions, and method calls.

Regarding claims 4 and 5, Neary further fails to teach speech recognizing voice prompts received from the voice response system. On Page 4 of the Office Action,
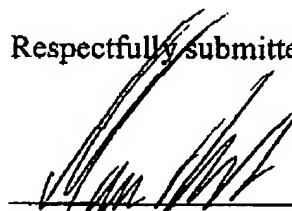
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Examiner points out that the actual utterance received from the voice response system is the speech recognizing voice prompts based on the premise that the utterance is the speech. However, Neary does not teach speech recognition. Neary encodes the voice prompts with information describing the spoken utterances, wherein the IVR can be pre-programmed to associate the list of options with coded signals (Neary, Pg. 2, paragraph [0019], ".. at least three categories of data storage are involved ... the IVR is pre-programmed..."). Neary is silent as to whether the voice response system converts speech to text. There is no mention of a "speech recognition system" in the patent. Referring to FIG. 7A of Neary, the ACG provides an "Enter 1" response to the IVR system from the spoken utterance "Press one for date". However, The Enter "1" command in Figure 7A is a tone sequence initiated by depressing the "1" number on the phone. It is not an audio representation of speech such as the "one" in the "Press one for data", otherwise the response would be "one" and not "1". Neary clearly identifies the response as a touchtone signal for the number "1" (Neary Pg. 3, paragraph [0034]). Accordingly, Neary does not teach speech recognizing a spoken utterance.

CONCLUSION

Applicants believe that this application is now in full condition for allowance, which action is respectfully requested. Applicants request that the Examiner call the undersigned if clarification is needed on any matter within this Amendment, or if the Examiner believes a telephone interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,

Date: 3/15/2006

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